

# GLOBAL CLIMATE HIGHLIGHTS

## MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF FEBRUARY 9, 1991

### 1. Western North America:

#### **EXTREMELY DRY WEATHER PERSISTS.**

Little or no precipitation was measured across the afflicted region, allowing large winter (wet season) precipitation deficits to accumulate for the fifth consecutive season in parts of the Far West. Since late December, shortfalls of 55-100 mm have accumulated in central and southwestern California while deficits of 100-185 mm have developed in northern California and parts of Oregon. Most Canadian locations have received only 15%-45% of normal rainfall during the period [6 weeks].

### 2. Eastern Canada:

#### **WARMER AIR MOVES INTO LABORADOR, BUT OTHER AREAS REMAIN CHILLY.**

Very mild weather moved into Labrador, abruptly ending the recent cold spell with weekly departures of +3°C to +6°C. In contrast, cold conditions persisted elsewhere, with temperatures averaging 3°C to 5°C below normal across Western Greenland, Newfoundland, and Baffin Island [6 weeks].

### 3. Southeastern United States:

#### **MORE RAINS SOAK SOUTHWESTERN PARTS OF REGION.**

Heavy precipitation fell from central Texas eastward across most of the western and central Gulf Coast, where 50-120 mm were measured. Elsewhere, moderate rains (25-65 mm) fell along the south Atlantic coast and in the Tennessee Valley. Light rains, however, engendered some recovery from the recent wet period across the Florida Panhandle, eastern Gulf coast, and northern lower Mississippi Valley. Despite this week's light totals, six week departures remain very high (250-490 mm) from southeastern Louisiana eastward through the Florida Panhandle [11 weeks].

### 4. Eastern South America:

#### **DRY WEATHER DOMINATES REGION.**

After a few weeks of recovery, little or no precipitation fell across the region as moisture deficits again began to rise [8 weeks].

### 5. Central and Southeastern Europe:

#### **WIDESpread SNOWFALL ACCOMPANIES COLD CONDITIONS.**

Below normal precipitation was reported throughout most of Europe, with moderate totals (25-55 mm) confined to southern Ireland, central Italy, and western Yugoslavia. Only light precipitation fell elsewhere [Dry-8 weeks]. Bitterly cold weather, however, engulfed much of Europe (weekly departures of -4°C to -10°C, with portions of Turkey averaging almost 15°C below normal), allowing much of the precipitation to fall as snow. Much of the region from Greece northeastward into the United Kingdom was blanketed under

5 to 91 cm of snow, with the heaviest amounts measured in Yugoslavia (for more details, see front cover) [Cold-3 weeks].

### 6. Southern Africa:

#### **MORE MODERATE TO HEAVY RAINFALL REPORTED.**

Above normal rains (generally 40-80 mm) again fell throughout central South Africa, Botswana, and all but the extreme northern tier of Zambia. Scattered locations in northwestern Zambia and from west-central through south-central Botswana measured 70-110 mm. Since late December, rainfall surpluses of 120-250 mm have affected most of Zambia [6 weeks].

### 7. Iran:

#### **DOWNPOURS BRING SECOND ROUND OF SEVERE FLOODING IN FOUR WEEKS.**

Official data across mountainous sections of Iran is sparse, but press reports indicate heavy rains fell across central and eastern Iran, particularly near the Pakistani and Afghani borders, for the second time in four weeks. The resultant flooding inundated nearly 160 villages and left over 50,000 individuals homeless [Episodic Event].

### 8. The Philippines and northern Borneo:

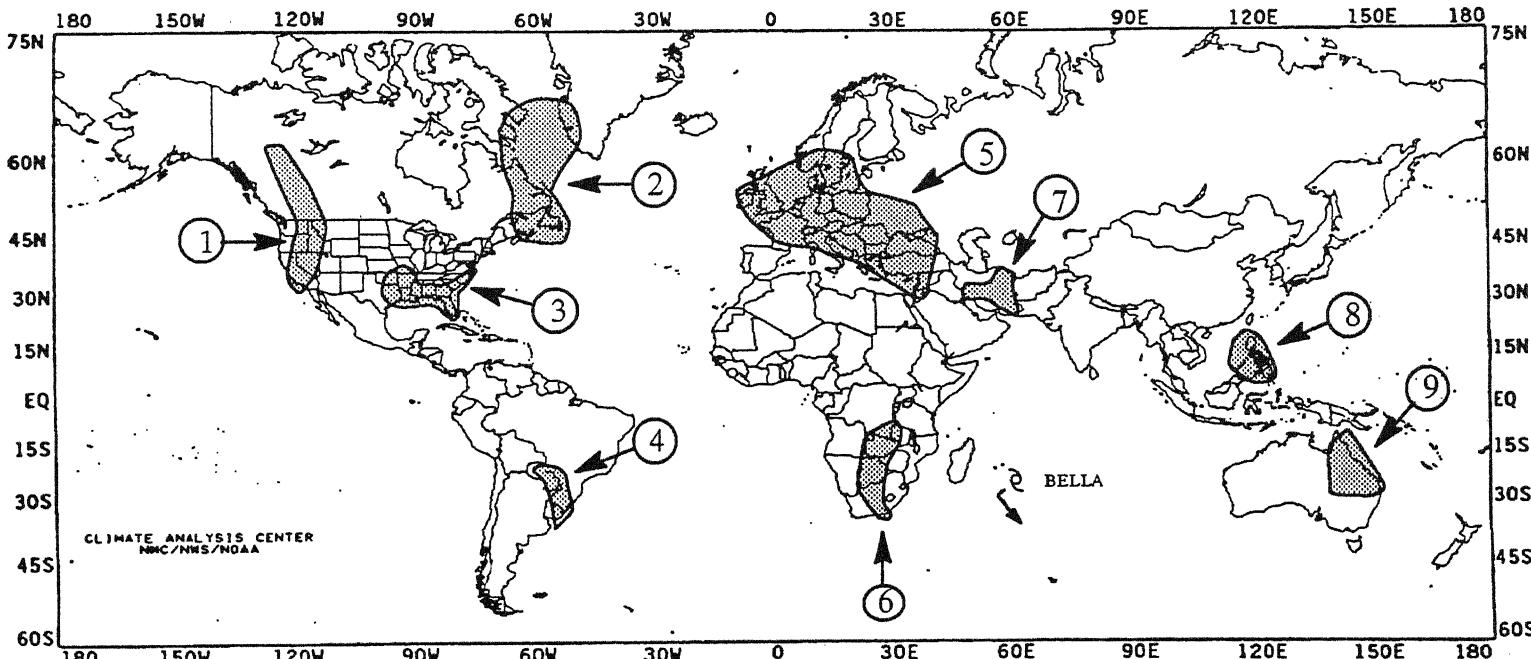
#### **SECOND CONSECUTIVE WINTER DROUGHT CONTINUES.**

The Philippine government declared portions of Mindanao and Visayas islands calamity areas and ordered silver nitrate cloud seeding in hopes of inducing heavier precipitation as a second consecutive winter drought continued affecting the country. Fortunately, some moderate rains (40-80 mm) were reported across northeastern Luzon, extreme eastern Samar, most of the central islands, and central Mindanao while little or no rainfall was measured elsewhere. According to press reports, more than 120,000 hectares of corn and rice have been lost because of the drought [10 weeks].

### 9. Northeastern Australia:

#### **INUNDATING RAINFALL POUNDS MUCH OF QUEENSLAND.**

Much of central and east-central Queensland from southern Cape York Peninsula southward reported 100-200 mm of rain while 200-320 mm battered much of the central Queensland coast, previously soaked by Tropical Cyclone Joy and its residual moisture. The cities of Bowen and Mackay, the wettest locations along the central Queensland coast, have measured 1400-1435 mm above normal rainfall since Christmas Day, with total rainfall in excess of 1800 mm. This week's rainfall was widespread throughout Queensland, with all but the southern tier of the state measuring over 50 mm [7 weeks].



TEXT: Approximate duration of anomalies is in brackets. Precipitation amounts and temperature departures are this week's values.

MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this Bulletin for current two week temperature anomalies, four week precipitation anomalies, long-term anomalies, and other details.

# UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

## FOR THE WEEK OF FEBRUARY 3 THROUGH FEBRUARY 9, 1990

The first full week of February produced temperatures more representative of April across most of the nation. More than 170 daily record highs were tied or broken across 28 states from the Far West to the Northeast as readings soared into the seventies as far north as the mid-Atlantic (Figure 1). The unusually warm conditions brought accelerated snow melt to some parts of the Midwest, generating widespread small stream and river flooding across portions of Indiana, Illinois and Ohio. Strong thunderstorms dumped up to 6 inches of rain on the southern Plains and western and central Gulf Coast states. Galveston Island reported widespread minor flooding after more than four inches of rain fell during a 6 hour period on Monday. Farther west, heavy rains and wind gusts up to 90 mph pounded coastal regions of the Pacific Northwest while dense fog and near zero visibilities in the San Joaquin Valley contributed to a 100-vehicle collision on U.S. Route 99. Farther north, wintry conditions prevailed across much of Alaska. Bitter cold and high winds combined to produce wind chills near -100°F across the northern tier. St. Paul Island observed a record low temperature for the month of February when the mercury plunged to -16°F.

The first half of the week began with relatively dry and unseasonably warm weather across most of the nation as high pressure dominated. Thunderstorms associated with a weak stationary front dumped up to 6 inches of rain on southern Florida during the weekend, washing out a bridge in Vero Beach. Meanwhile, a developing low pressure system over the western Gulf produced thunderstorms that dumped heavy rains on parts of eastern Texas and Louisiana, where as much as 4 inches were reported. Rains also fell across portions of the Midwest which, combined with unusually warm weather, melted snow and ice rapidly, and raised numerous rivers out of their banks. Farther west, heavy rains (up to 2.5 inches) and high winds pounded the northern California and the western halves of Washington and Oregon while up to 9 inches of snow blanketed parts of the Cascades and northern sections of the Sierra Nevadas. San Francisco, CA reported 1.11 inches of rain Monday, their largest daily total in almost a year.

The low over the western Gulf of Mexico tracked slowly to the northeast and into the mid-Atlantic by Thursday, spreading rain from the Tennessee Valley to the Northeast. Dense fog developed across parts of Ohio and Kentucky, reducing visibilities to zero. More seasonable temperatures pushed into the eastern U.S. by Saturday, replacing the abnormally warm conditions earlier in the week. Farther west, dry conditions prevailed west of the Mississippi River and unseasonably mild weather continued across the northern Plains, upper Midwest, and parts of the Far West. Over a dozen record highs were established from California

to Michigan on Friday. In sharp contrast, blizzard warnings were issued along the Alaskan Arctic Coast as heavy snow, high winds and bitter cold gripped the region. Nome observed a second consecutive week with sub-zero average temperatures.

According to the River Forecast Centers, the greatest weekly totals (more than 3 inches) were measured across the southern Plains, western Gulf Coast, the Cascades, and coastal Washington (Table 1). Scattered heavy amounts were recorded in southern Indiana, southeastern Florida, extreme southeastern Alaska and across portions of the Hawaiian Islands. Moderate to heavy totals were measured in east-central Texas, portions of the lower Mississippi Valley, western and southern sections of the Ohio Valley, northwestern Florida, the Intermountain West, northern California and central and northern sections of the Far West. Light to moderate amounts fell on the remainder of the southern Plains, through the lower Mississippi, Tennessee, and Ohio Valleys, along the Appalachians, across the mid-Atlantic, and in southern and central New England. Little or no precipitation was observed in central Florida, the Great Lakes, the central and northern Plains, and from the Rockies southwestward through southern California.

Unseasonably warm conditions enveloped most of the contiguous U.S. during the week. Numerous daily record highs were reported from California to Maine, with a few locations establishing all-time February record highs. Weekly departures exceeded +30°F across portions of the northern Plains and upper Midwest as readings soared into the fifties (Table 2). Departures of +20°F and warmer were common from Montana to Maine, and mild conditions across the rest of the nation generated weekly departures between +5°F and +20°F from the East Coast to the Far West. Farther north, southeastern Alaska observed weekly departures of up to +5°F as high temperatures reached the forties at a few locations. In addition, most of the Hawaiian Islands reported weekly departures between +2°F and +4°F as highs climbed well into the eighties at most locations and above 90°F at Hilo.

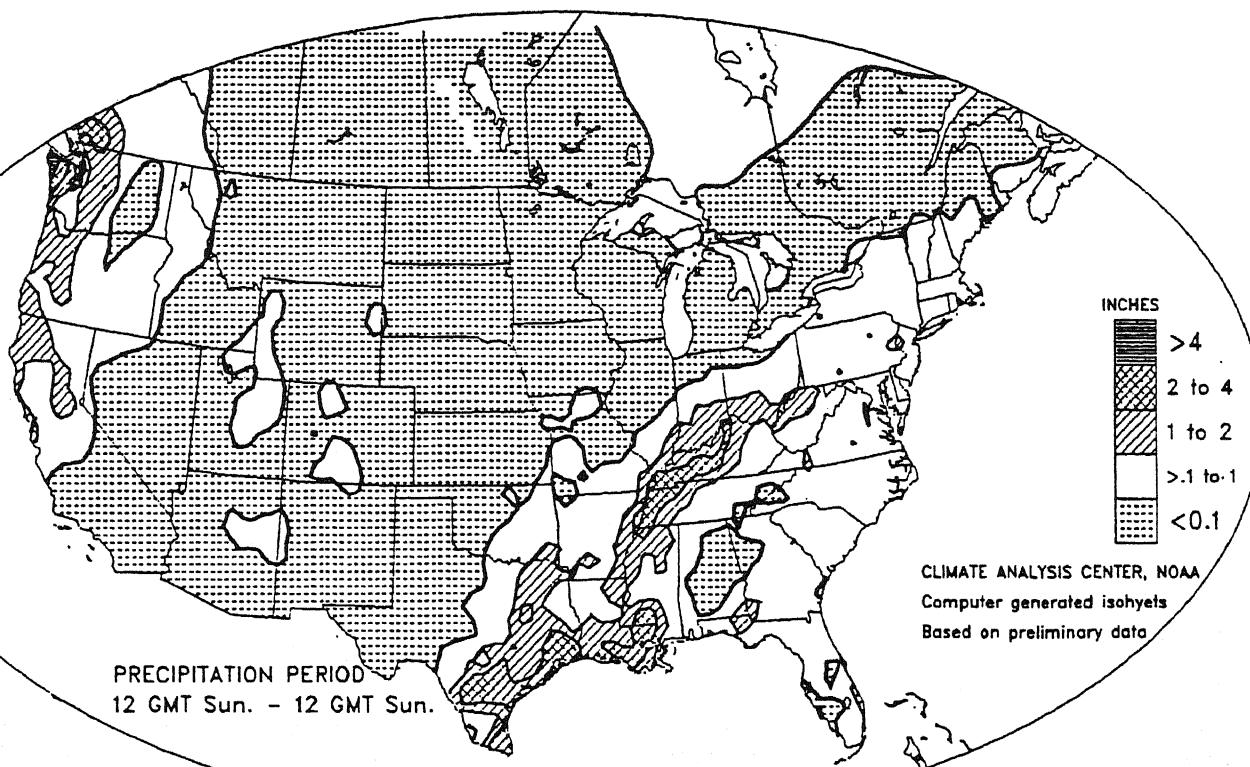
In contrast, below normal temperatures were confined to a small section of the central Rockies (Table 3). Weekly departures between -3°F and -6°F were limited to a few mountainous locations where sub-zero minimum temperatures were observed. Farther north, most of Alaska reported exceptionally low temperatures. Weekly departures of -13°F to -26°F were reported across central and northern sections where minimum temperatures dropped below -40°F. The temperature at Barrow, AK failed to rise above -20°F all week. Departures between -4°F and -12°F were observed south-central and southwestern portions of the state, including much of the Aleutians.

**TABLE 1. Selected stations with 2.00 or more inches of precipitation for the week.**

STATION	TOTAL (INCHES)	STATION	TOTAL (INCHES)
QUILLAYUTE, WA	4.64	BROWNSVILLE, TX	2.49
GALVESTON, TX	4.51	BOWLING GREEN, KY	2.47
KAHULUI, MAUI, HI	3.82	HOUSTON/WILLIAM HOBBY, TX	2.44
KETCHIKAN, AK	3.24	VICTORIA, TX	2.41
MCCOMB, MS	3.09	MEMPHIS NAS, TN	2.38
ANNETTE ISLAND, AK	2.98	MEMPHIS, TN	2.22
KODIAK, AK	2.96	SITKA, AK	2.18
YAKUTAT, AK	2.91	HOQUIAM, WA	2.09
CINCINNATI, OH	2.51		

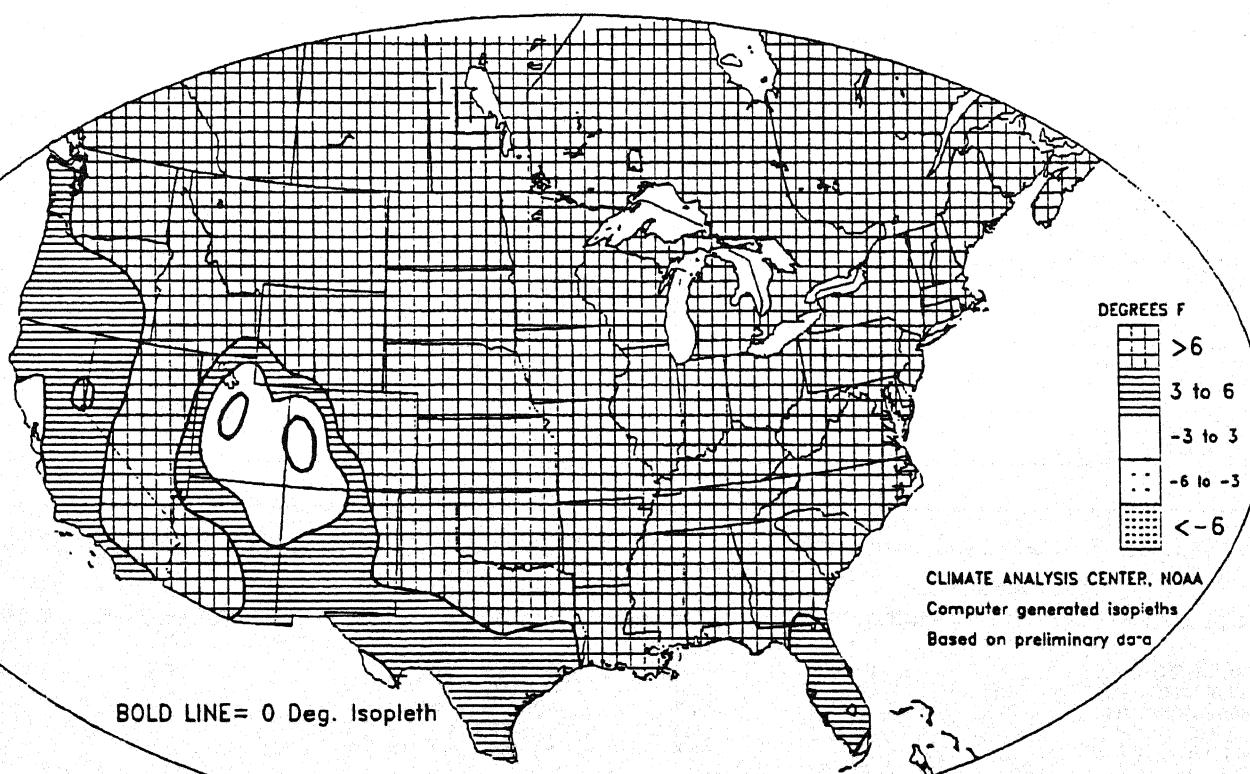
## OBSERVED PRECIPITATION

February 3 - 9, 1991



## DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)

February 3 - 9, 1991



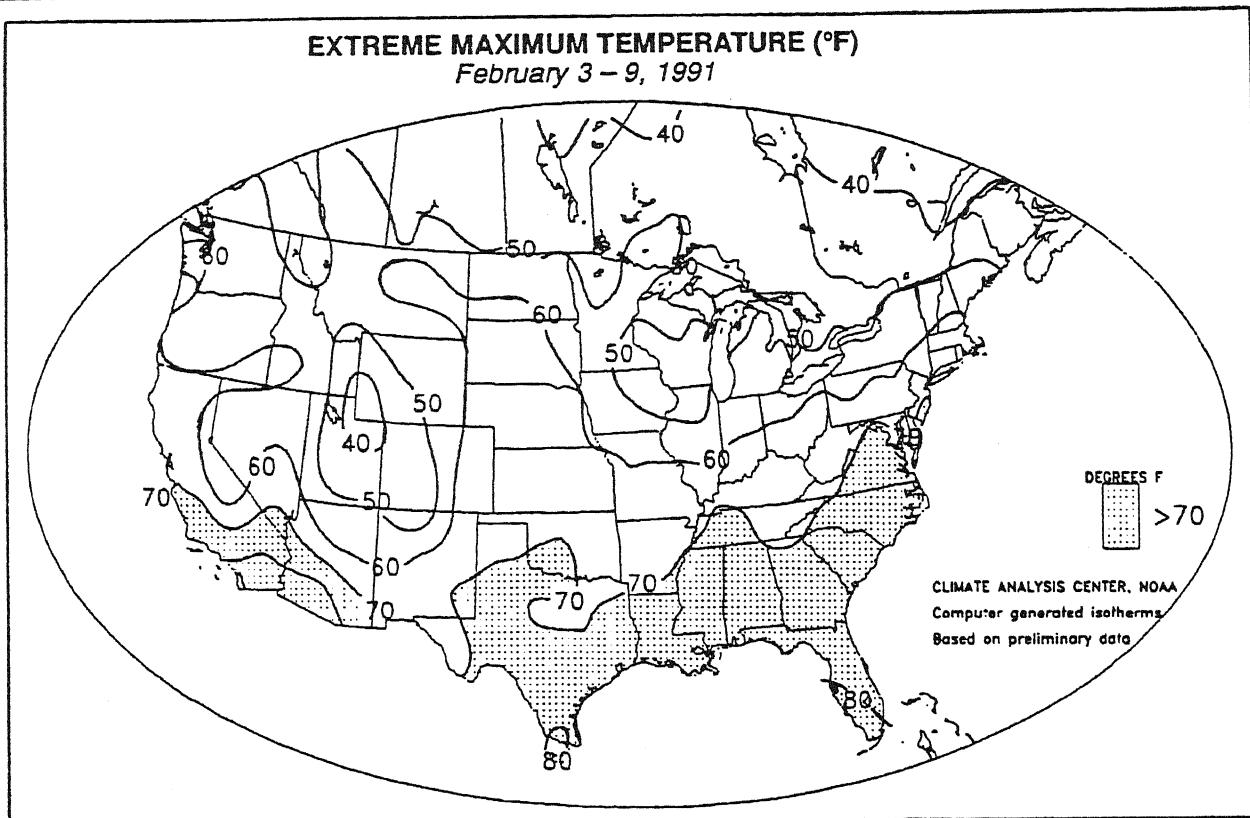


Figure 1. Extreme maximum temperatures (°F) during the week of Feb. 3 - 9, 1991. Isotherms are drawn for every 10°F, and dotted areas were more than 70°F. Unseasonably mild weather more typical of late April than early February covered much of the country last week, pushing highs into the seventies as far north as New Jersey and into the sixties in Montana and North Dakota. Daily maximum temperature departures exceeded +30°F at many stations in the northern U.S., and dozens of new daily record highs were established during the period.

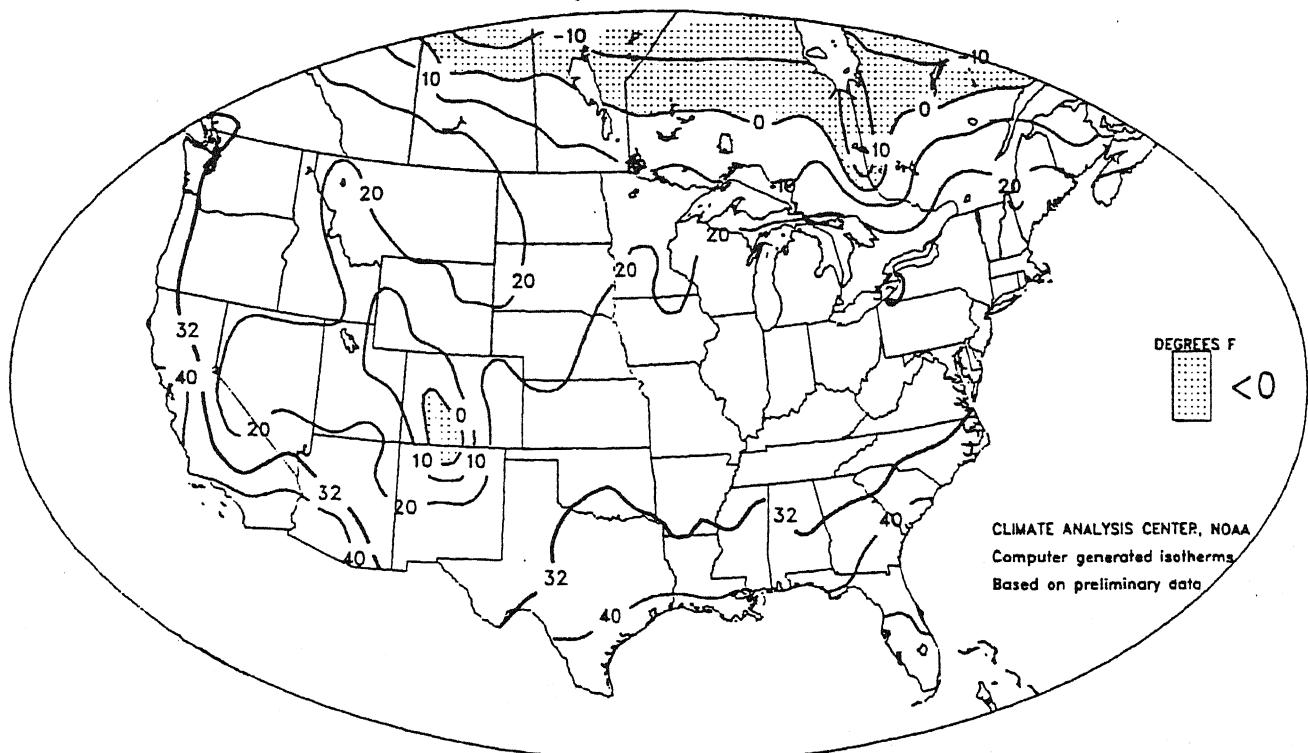
**TABLE 2. Selected stations with temperatures averaging 22.0°F or more ABOVE normal for the week.**

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
DEVIL'S LAKE, ND	+32.8	37.9	MARQUETTE, MI	+24.8	37.6
GRAND FORKS, ND	+30.1	36.1	MASSENA, NY	+24.3	39.2
WARROAD, MN	+29.2	32.7	WATERTOWN, SD	+24.1	36.0
MINOT, ND	+29.0	39.6	MONTPELIER, VT	+23.6	39.2
JAMESTOWN, ND	+28.8	38.1	PARK FALLS, WI	+23.4	35.2
INTERNATIONAL FALLS, MN	+28.8	32.9	HAVRE, MT	+23.2	41.0
FARGO, ND	+27.9	36.0	HURON, SD	+23.0	38.5
WILLISTON, ND	+27.2	39.2	HANCOCK/HOUGHTON CO., MI	+22.9	35.8
ALEXANDRIA, MN	+26.8	36.0	BURLINGTON, VT	+22.5	38.8
ABERDEEN, SD	+26.3	38.5	PELLSTON, MI	+22.5	36.7
BISMARCK, ND	+26.3	37.8	EAU CLAIRE, WI	+22.5	35.1
DULUTH, MN	+26.3	35.8	WAUSAU, WI	+22.3	35.8
ST. CLOUD, MN	+25.9	36.7	PIERRE, SD	+22.1	41.0
DICKINSON, ND	+25.6	40.6	MINNEAPOLIS, MN	+22.0	36.5
GLASGOW, MT	+25.2	37.6			

**TABLE 3. Selected stations with temperatures averaging 4.0°F or more BELOW normal for the week.**

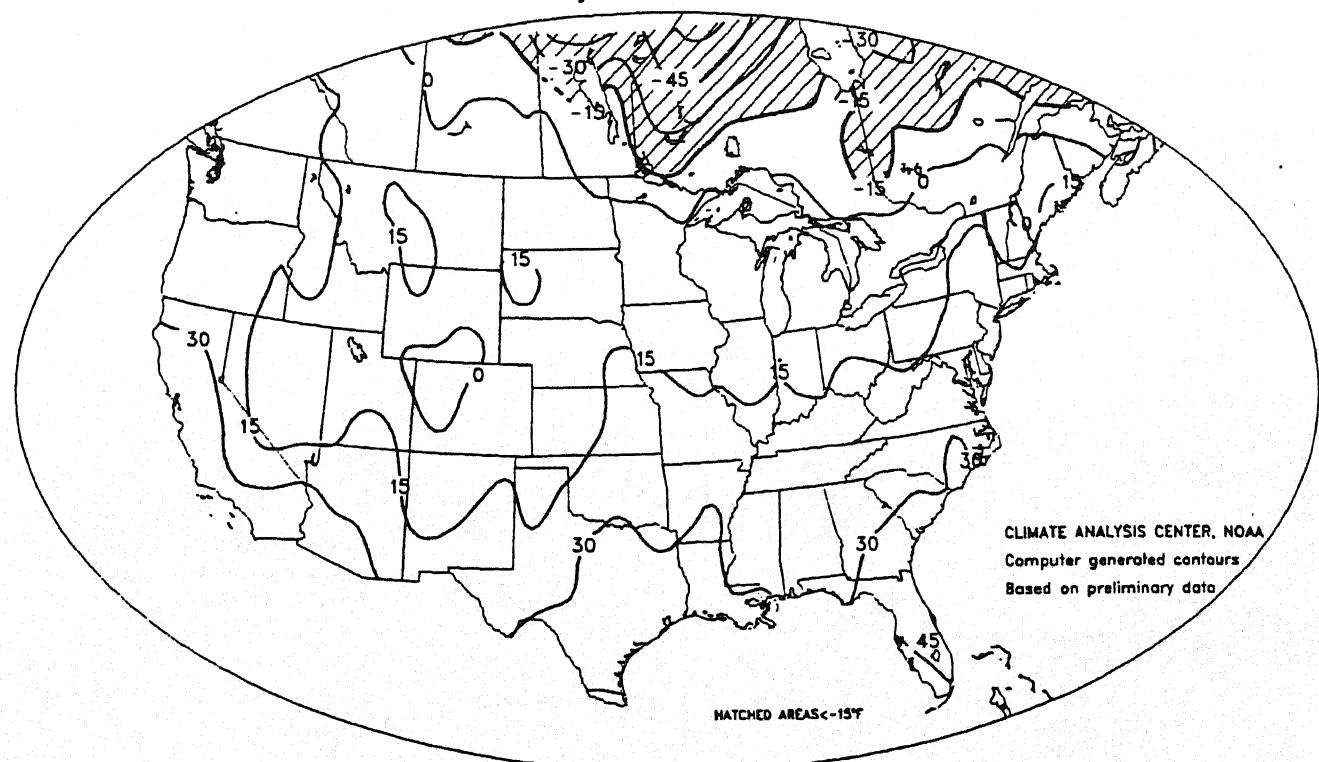
STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
KOTZEBUE, AK	-26.3	-30.8	BARROW, AK	-14.2	-33.0
BETTLES, AK	-22.0	-29.2	KODIAK, AK	-12.8	17.8
MCGRATH, AK	-19.8	-24.5	COLD BAY, AK	-12.2	15.4
NOME, AK	-19.4	-15.5	TALKEETNA, AK	-11.2	1.9
ILIAMNA, AK	-19.4	-2.6	ANCHORAGE, AK	-9.5	6.8
BETHEL, AK	-17.6	-12.3	KENAI, AK	-8.6	5.9
KING SALMON, AK	-17.6	-3.6	HOMER, AK	-8.5	15.3
BIG DELTA, AK	-16.9	-17.3	GRAND JUNCTION, CO	-6.1	24.6
FAIRBANKS, AK	-15.8	-22.7	GULKANA, AK	-4.5	-5.1
ST. PAUL ISLAND, AK	-15.3	7.5	ADAK, AK	-4.3	28.6

**EXTREME MINIMUM TEMPERATURE (°F)**  
February 3 – 9, 1991



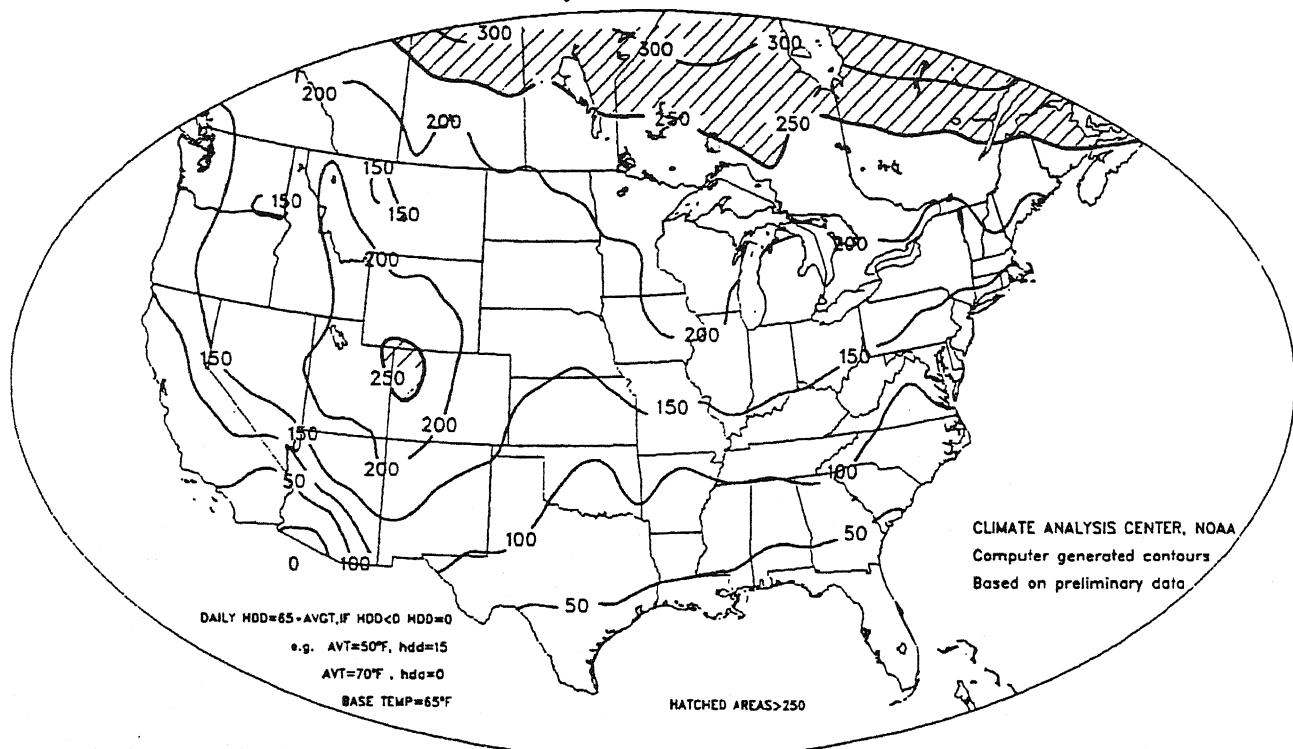
Unseasonably warm weather prevailed over much of the United States, with subzero temperatures restricted to the central Rockies (top). The relatively mild conditions, combined with light winds, kept wind chills unusually high for this time of year throughout the Nation (bottom).

**MINIMUM WIND CHILL (°F)**  
February 3 – 9, 1991



## WEEKLY TOTAL HEATING DEGREE DAYS

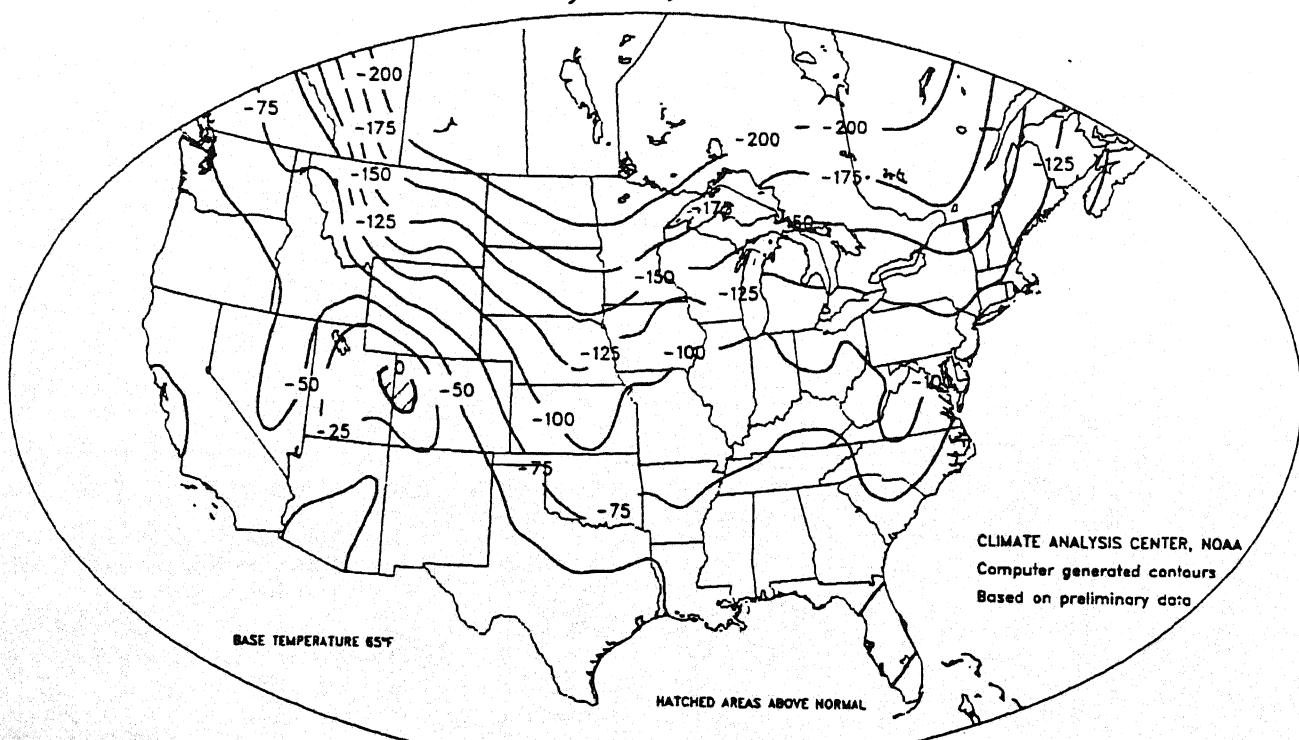
February 3 – 9, 1991



Abnormally high temperatures resulted in light heating usage throughout the country, with the greatest need (>200 HDD's) reported in the northern Intermountain West, central Rockies, western Great Lakes, and upper Mississippi Valley (top). Portions of the northern Great Plains experienced only half of the normal heating demand, with above normal HDD's limited to a small portion of the central Rockies (bottom).

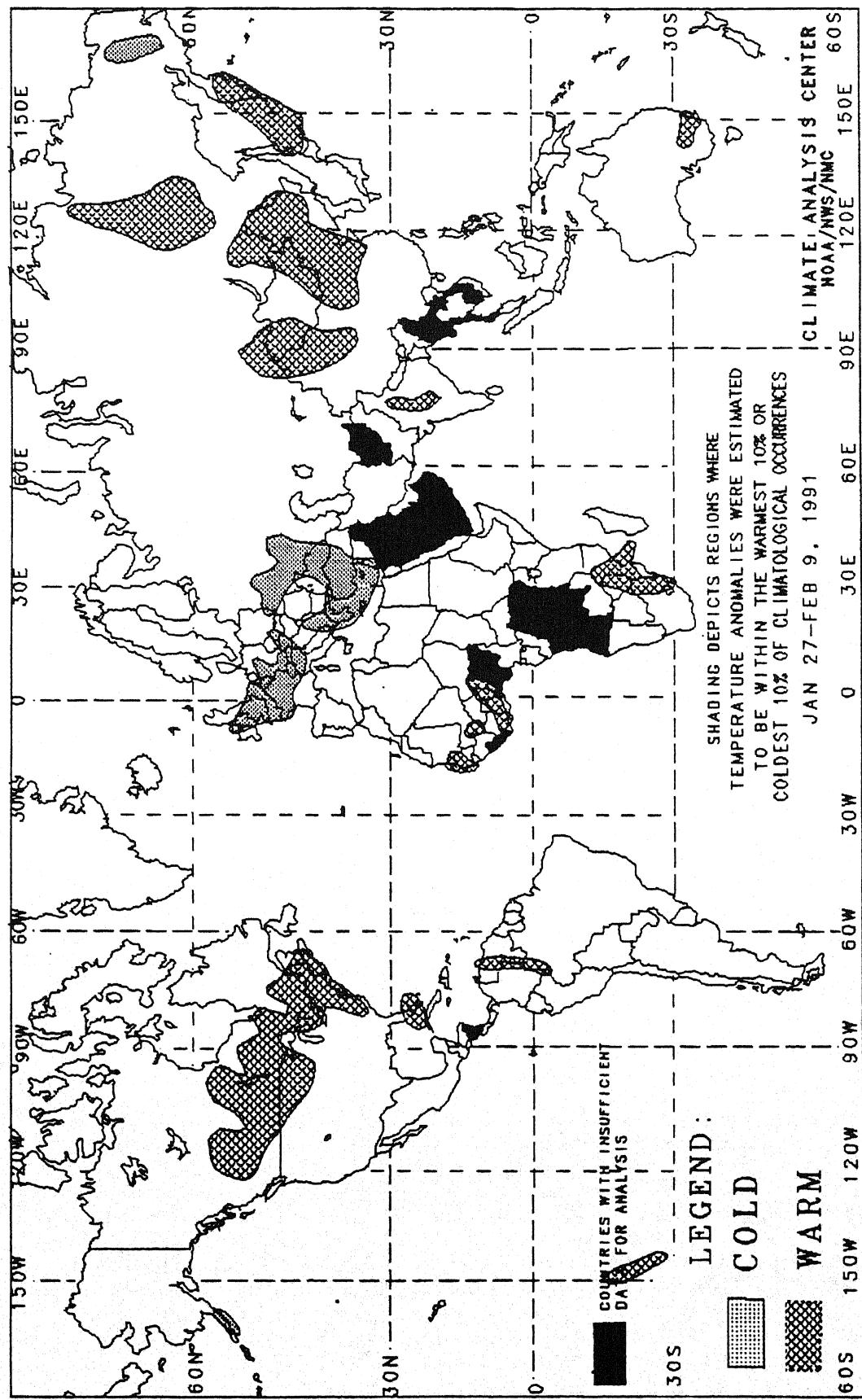
## WEEKLY DEPARTURE FROM NORMAL HDD

February 3 – 9, 1991



# GLOBAL TEMPERATURE ANOMALIES

2 WEEKS



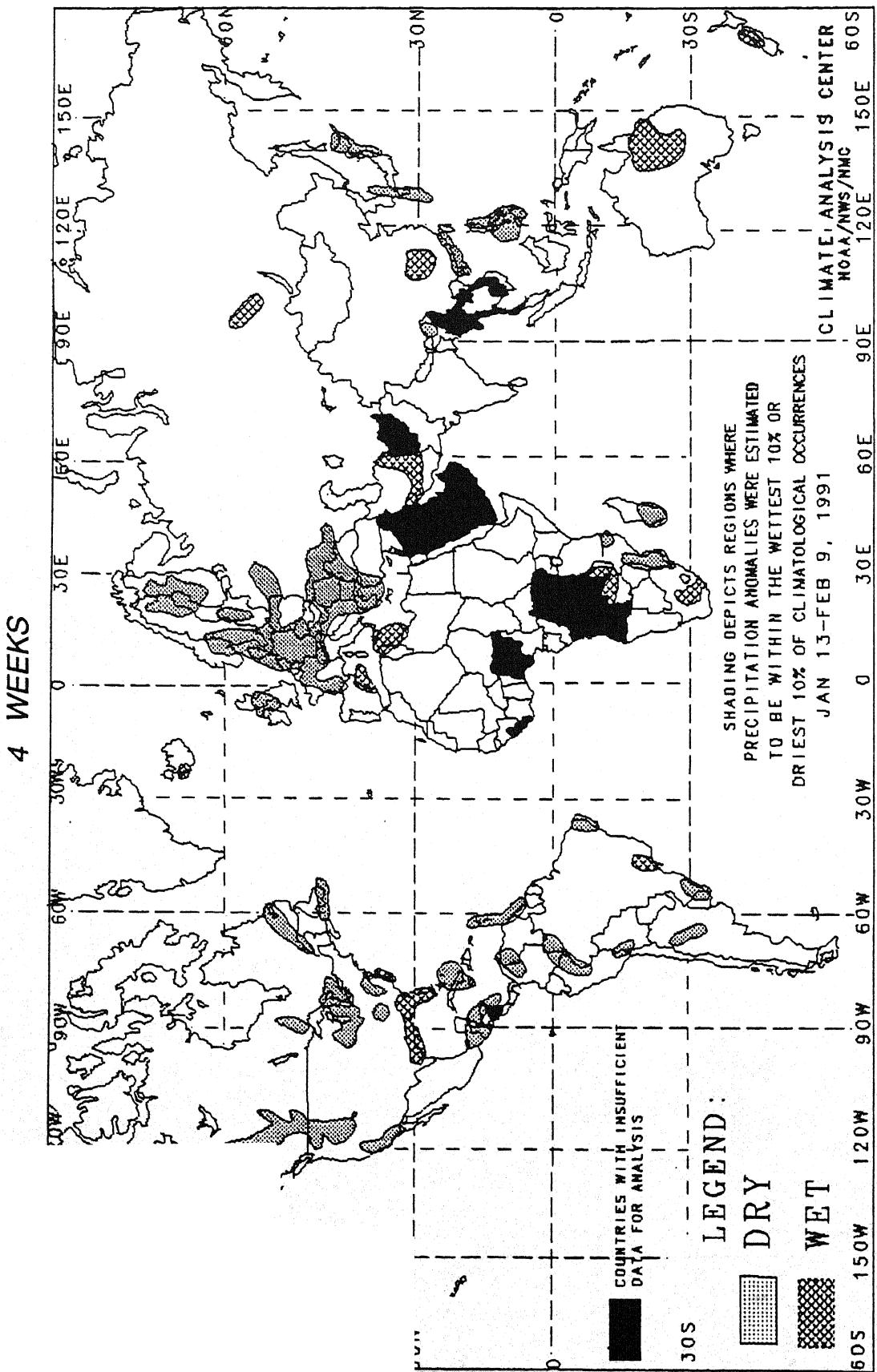
The anomalies on this chart are based on approximately 2500 observing stations for which at least 13 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

# GLOBAL PRECIPITATION ANOMALIES



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

# UNITED STATES MONTHLY CLIMATE SUMMARY

## JANUARY 1991

Extreme drought continued in California, eastern Oregon, and central Washington as much of the Far West received less than half the normal monthly precipitation for the second straight month during what is typically the wettest time of the year. January 1991 state precipitation rankings were at near-record low January levels in Nevada [3rd], Oregon [5th], and California [6th]. Combined with subnormal autumn precipitation, California is headed for a fifth consecutive drier than normal rainy season [Figures 7 and 8] as water shortages are critical, and water agencies have forced cutbacks in agricultural, industrial, and residential water use. Furthermore, the climatological probability for a normal 1990–1991 rainy season are quite low [see inside back cover]. In sharp contrast, several winter storms raked the Gulf Coast states with drenching rain and violent weather. Intense thunderstorms spawned dozens of tornadoes across the Deep South, well above the average January number [Figure 1]. Parts of Texas, Florida, and Georgia received over four times the normal amount of precipitation as numerous cooperative stations measured over 10 inches, saturating the soils and causing widespread flash flooding. It was the wettest January on record in Florida and Georgia, while Louisiana and Texas observed the third and fifth wettest, respectively. The heavy rains in central and southern Florida diminished long-term dryness while drought conditions along the western and eastern Gulf and southern Atlantic Coasts were alleviated.

Frigid air behind a powerful Arctic front blasted much of the nation at the start of the month with the exception of the Eastern Seaboard, where relatively mild weather prevailed. As the month progressed, abnormally mild air gradually spread eastward from the West into the central U.S. as subsequent Arctic fronts ushered in only brief cold spells during the remainder of January. Trapped cold air and snow cover, however, kept many Great Basin and central Rocky Mountain valley locations abnormally cold. In contrast, the southern two-thirds of Florida basked in near-record warmth due to the lack of cold air intrusions as monthly temperatures averaged more than 6°F above normal. At the month's end, anomalously mild weather invaded the northern Plains and returned to the East after a brief cold snap while the Great Basin remained cold.

The month commenced with heavy rains and severe flooding in the Ohio Valley. Flood waters gradually receded as the precipitation slackened during the middle of the month. The heavy rains shifted southward along the Gulf Coast where a series of storm systems produced inundating rains from eastern Texas across southern Louisiana, Mississippi, Alabama, Georgia, the Florida panhandle, and the Carolina coasts. A system early in the month also spread heavy precipitation up the Atlantic Coast while another system during mid-month ignited severe thunderstorms which spawned tornadoes from Texas to Florida. In the West, heavy snows covered portions of the central and southern Rockies while infrequent Pacific storms brought only moderate precipitation to western Washington and parts of the Oregon Coast.

During the latter half of the month, winter storms continued to pound the South as heavy rains were only briefly interrupted by a few days of fair weather. Some stations reported up to 16 days with measurable rain for the month. These storms generated severe thunderstorms which produced a number of flash floods from Louisiana to the southern Atlantic Coast and spawned tornadoes in Louisiana, Georgia, and northern Florida. One of the systems dumped up to a half foot of snow on the southern Appalachians. Arctic air briefly plunged out of Canada into the Deep South behind these frontal systems, bringing in

the coldest air of the Winter with freezing temperatures recorded in northern Florida. Bitterly cold conditions spread from the Great Lakes into northern New England accompanied by strong winds and heavy lake-effect snows. In the West, a strong dome of high pressure anchored over the Great Basin brought unseasonably cold weather to the Rockies and Intermountain West while the Pacific Coast states observed mild but relatively dry conditions.

According to the River Forecast Centers, the greatest monthly precipitation (more than 8 inches) were located from eastern Texas eastward along the Gulf Coast to the southern Atlantic Coast, in parts of south-central Florida, and along the coast of southeastern Alaska [Table 1, Figures 2 and 3]. A number of cooperative stations from Louisiana to Georgia and in northern Florida reported between 18 and 24 inches, and several locations reported record January precipitation [Table 5]. Regionally, the Southeast recorded the second wettest January since 1895 while the South had the ninth wettest January. Much lower totals but above normal precipitation also occurred in the parts of the central and southern Rockies, middle and lower Missouri Valley, mid-Atlantic, central Alaska, and northern New England.

In stark contrast, less than half the normal January precipitation was observed across the northern Plains and upper Midwest, portions of the central Great Plains and Rockies, Hawaii, and throughout much of the Far West [Table 2, Figures 2 and 3]. Elsewhere, subnormal monthly precipitation was observed in the Tennessee, Ohio, and middle Mississippi Valleys, southern New England, and extreme southern Texas and Florida. Regionally, the West, Northwest, and West-North Central had the fifth, ninth, and thirteenth driest January on record, respectively. The widespread dryness in the northern and western U.S. more than offset the exceptional wetness in the Deep South, producing a slightly drier than normal January nationally [38th driest].

Despite brief shots of cold air, abnormally mild weather prevailed over the eastern third of the nation and in the Southwest [Figures 4 and 5]. The greatest January departures across the lower 48 states were found in southern Florida [more than +6°F], and a few stations recorded all-time January record highs [Table 6]. No region, however, had a high (warm) January historical ranking. Although bitterly cold weather enveloped the northern Plains and Rockies early in the month, January temperatures averaged above normal due to exceptionally mild conditions during late January. Farther north, most of Alaska experienced above normal monthly temperatures, with departures up to +10°F in the central section of the state [Table 3]. Much of the mild weather occurred during the week of Jan. 20–26 when readings soared into the forties at nearly every Alaskan station.

A severe Arctic outbreak during the first week of January and sporadic periods of cold during the remainder of the month caused temperatures to average below normal in much of the nation's midsection, the Great Basin, and central Rockies [Figures 4 and 5]. January 1991 temperatures averaged more than 4°F below normal in portions of the latter two areas and in extreme northern Maine [Table 4]. Unlike a year ago when the contiguous U.S. observed the warmest January on record, January 1991 regional temperatures were generally close to the middle third of the historic distribution (e.g. near normal), and the national temperatures were ranked a rather unspectacular 32nd coldest.

**PRECIPITATION RANKINGS FOR JANUARY, 1991, BASED ON  
THE PERIOD 1895 TO 1990. 1 = DRIEST, 97 = WETTEST.**

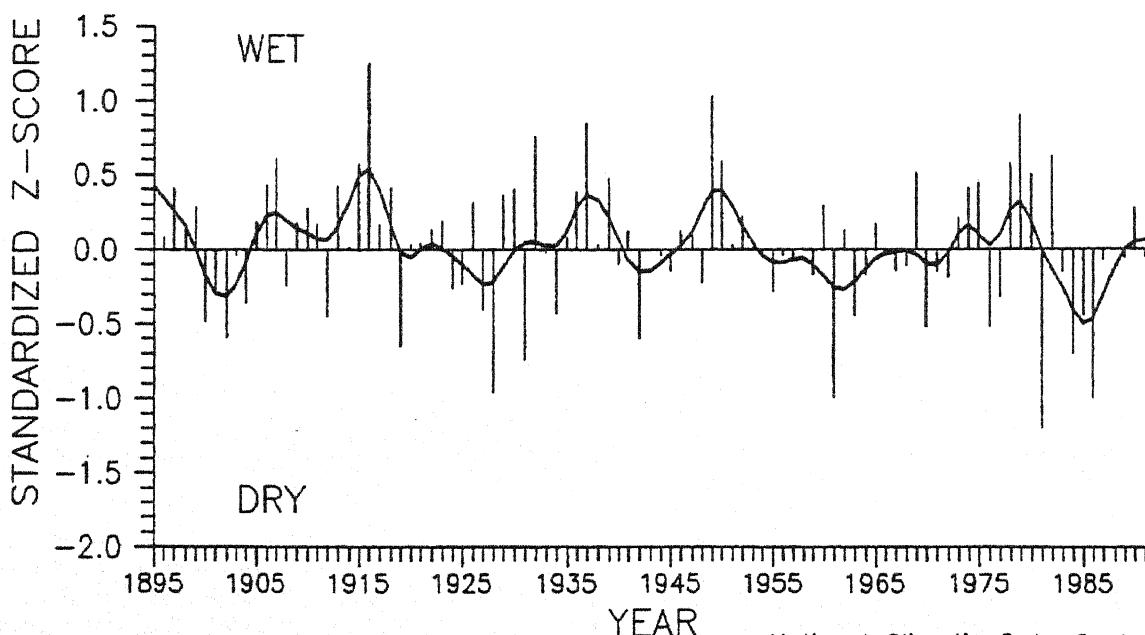
<u>STATE</u>	<u>RANK</u>	<u>STATE</u>	<u>RANK</u>	<u>STATE</u>	<u>RANK</u>	<u>STATE</u>	<u>RANK</u>
AL	<b>88</b>	IA	36	NE	49	RI	48
AZ	44	KS	44	NV	<i>3</i>	SC	87
AR	43	KY	43	NH	27	SD	19
CA	6	LA	<b>95</b>	NJ	75	TN	23
CO	73	ME	31	NM	72	TX	<b>93</b>
CT	35	MD	70	NY	46	UT	52
DE	87	MA	45	NC	<b>91</b>	VT	35
FL	<b>97</b>	MI	16	ND	<i>8</i>	VA	62
GA	<b>97</b>	MN	39	OH	45	WA	19
ID	27	MS	83	OK	40	WV	54
IL	34	MO	58	OR	<i>5</i>	WI	23
IN	39	MT	24	PA	41	WY	15

National Climatic Data Center

Top 10 rankings : **BOLD**

Bottom 10 rankings : *Italics*

**U.S. NATIONAL MEAN PRECIPITATION INDEX  
JANUARY, 1895-1991**



U.S. National January 1991 mean precipitation index (top) and temperature (bottom). The monthly precipitation for each climate division in the country (total of 344) was first standardized over the 1951-1980 period, then weighed by area and averaged to determine a national standardized precipitation value. Negative (positive) values are dry (wet). Based upon the index, the January 1991 precipitation was SLIGHTLY BELOW the long-term mean (the 38th driest January during the past 97 years). There were large differences in the monthly precipitation amounts across the lower 48 states. Copious monthly rains inundated much of the Gulf Coast states. Individually, several locations observed the wettest January on record; state-wide, Georgia and Florida recorded the wettest January since 1895; and regionally, the Southeast was ranked as the 2nd wettest during the past 97 years. In sharp contrast, well below normal monthly precipitation afflicted much of the Far West, the northern tier of states, and the Ohio and Tennessee Valleys. Regionally, the West [5th], Northwest [9th], and West-North Central [13th] were extremely dry for the second consecutive month.

**TEMPERATURE RANKINGS FOR JANUARY, 1991, BASED ON  
THE PERIOD 1895 TO 1991. 1 = COLDEST AND 97 =  
WARMEST.**

STATE	RANK	STATE	RANK	STATE	RANK	STATE	RANK
AL	52	IA	23	NE	33	RI	57
AZ	61	KS	27	NV	39	SC	59
AR	20	KY	57	NH	60	SD	41
CA	51	LA	35	NJ	65	TN	55
CO	14	ME	31	NM	35	TX	24
CT	56	MD	65	NY	54	UT	21
DE	46	MA	41	NC	67	VT	60
FL	81	MI	33	ND	50	VA	71
GA	56	MN	41	OH	51	WA	34
ID	26	MS	54	OK	28	WV	57
IL	32	MO	19	OR	40	WI	40
IN	40	MT	36	PA	58	WY	30

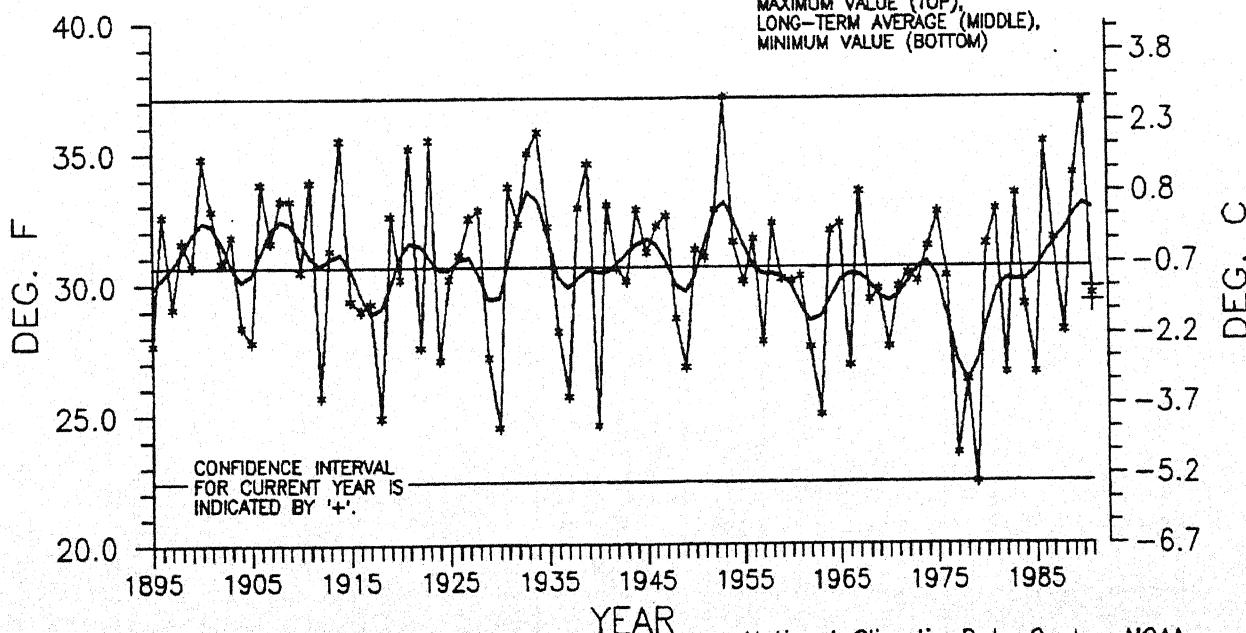
*National Climatic Data Center*

Top 10 rankings : **BOLD**

Bottom 10 rankings : *Italics*

**U.S. NATIONAL TEMPERATURE  
JANUARY, 1895–1991**

STRAIGHT HORIZONTAL LINES ARE:  
MAXIMUM VALUE (TOP),  
LONG-TERM AVERAGE (MIDDLE),  
MINIMUM VALUE (BOTTOM)



Across the contiguous U.S., January 1991 temperatures averaged SLIGHTLY BELOW the long-term mean, ranking as the 32nd coldest January since 1895 (97 years). Unlike the monthly precipitation, very few areas reported January temperature extremes, with most regions ranking near the middle third of the historic distribution. The few exceptions included monthly departures exceeding +4°F in the southern two-thirds of Florida, coastal North Carolina, and central Alaska, and January temperatures averaging more than 4°F below normal in northern Maine and parts of the Great Basin and central Rockies.

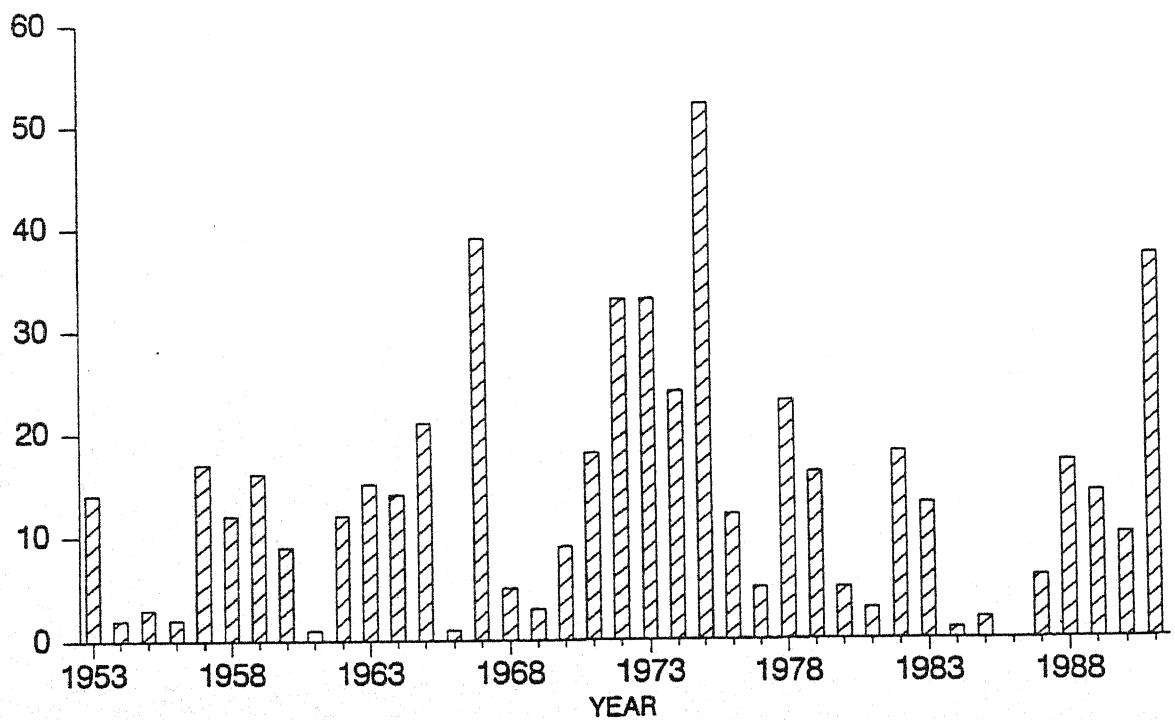
**TEMPERATURE AND PRECIPITATION RANKINGS FOR JANUARY 1991, BASED ON THE PERIOD 1895 TO 1990. 1 = DRIEST/COLDEST AND 97 = WETTEST/HOTTEST.**

<u>REGION</u>	<u>PRECIPITATION</u>	<u>TEMPERATURE</u>
NORTHEAST	42	53
EAST NORTH CENTRAL	26	32
CENTRAL	38	37
SOUTHEAST	96	65
WEST NORTH CENTRAL	13	40
SOUTH	89	24
SOUTHWEST	54	27
NORTHWEST	9	32
WEST	5	42
NATIONAL	38	32

*National Climatic Data Center*

### **TOTAL NUMBER OF TORNADOES, U.S.**

JANUARY TOTAL, 1953-1991



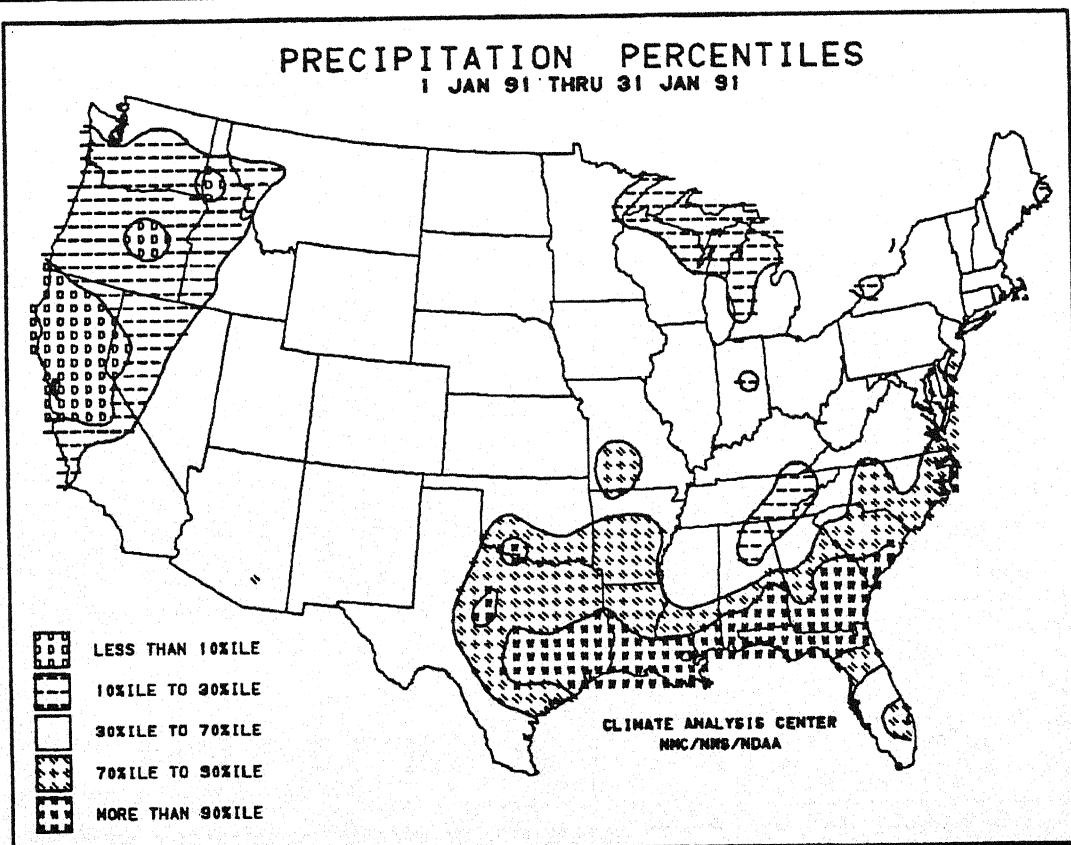
*National Climatic Data Center, NOAA*

**Figure 1.** Total number of tornadoes in the contiguous U.S., January total, 1953-1991. The first month of 1991 continued last year's pattern of an abnormally high number of twisters. Preliminary data from the National Weather Service reported 37 tornadoes across the lower 48 states in January 1991, well above the 1953-1990 average of 13, but not a record January total (3rd after 1975 and 1967).

**TABLE 1. SELECTED STATIONS WITH 150% OR MORE OF THE NORMAL PRECIPITATION AND 9.00 INCHES OR MORE PRECIPITATION; OR, STATIONS WITH 16.00 INCHES OR MORE PRECIPITATION AND NO NORMALS DURING JANUARY 1991.**

STATION	TOTAL (INCHES)	PCT. OF NORMAL	STATION	TOTAL (INCHES)	PCT. OF NORMAL
APALACHICOLA, FL	23.48	668.9	BRUNSWICK, GA	12.02	390.3
NEW ORLEANS/LAKE FRONT, LA	20.68	***	MACON/WARNER-ROBINS AFB, GA	11.16	345.5
VALPARAISO/EGLIN AFB, FL	19.90	473.8	LAFAYETTE, LA	10.96	232.2
VALDOSTA/MOODY AFB, GA	19.82	***	MACON, GA	10.87	255.2
NEW ORLEANS/MOISANT, LA	19.25	388.9	GALVESTON, TX	10.75	359.5
VALDOSTA, GA	19.06	***	KODIAK, AK	10.67	185.2
TALLAHASSEE, FL	18.96	408.6	AUSTIN/BERGSTROM AFB, TX	10.44	567.4
PENSACOLA, FL	18.77	419.9	WEST PALM BEACH, FL	10.43	387.7
PENSACOLA NAS, FL	17.79	***	PALACIOS, TX	10.23	395.0
NEW ORLEANS NAS, LA	17.54	***	WILMINGTON, NC	10.22	280.8
PANAMA CITY/TYNDALL AFB, FL	16.81	***	JACKSONVILLE, FL	10.21	348.5
MILTON/WHITING NAS, FL	16.31	***	ALBANY, GA	10.20	262.9
MOBILE, AL	16.07	351.6	MONTGOMERY/MAXWELL AFB, AL	10.07	266.4
BILOXI/KEESLER AFB, AL	15.49	385.3	HOUSTON, TX	9.76	280.5
PORT ARTHUR, TX	14.87	366.3	VERO BEACH, FL	9.72	400.0
COLLEGE STATION, TX	14.53	585.9	BATON ROUGE, LA	9.69	211.6
LAKE CHARLES, LA	14.29	312.0	ALEXANDRIA/ENGLAND AFB, LA	9.68	217.0
WAYCROSS, GA	13.83	417.8	AUSTIN, TX	9.21	579.2
CAPE HATTERAS, NC	12.44	258.6	LUFKIN, TX	9.01	253.8

(Note: Stations without precipitation normals are indicated by asterisks.)



**Figure 2. January 1991 precipitation percentiles.** Significant monthly wetness [ $>70\text{th}\text{ percentile}$ ] soaked much of the Deep South and southern Great Plains, including record and near-record January precipitation at several stations in southeastern Texas, southern sections of Louisiana, Mississippi, and Alabama, the panhandle of Florida, and along coastal Carolina. The states of Georgia and Florida observed the wettest January on record, while Louisiana [3rd] and Texas [5th] recorded near-record monthly precipitation. In sharp contrast, extremely dry weather [ $<30\text{th}\text{ percentile}$ ] covered the Tennessee Valley, upper Great Lakes, and much of the Far West, the latter area for the second successive month AND during the normally wettest month of the year. Nevada [3rd], Oregon [5th], and California [6th] had one of the ten driest Januaries on record. The Dakotas were also very dry, but the winter months typically have low precipitation totals.

TABLE 2. SELECTED STATIONS WITH 50% OR LESS NORMAL PRECIPITATION AND NORMAL PRECIPITATION 3.00 INCHES OR MORE DURING JANUARY 1991.

STATION	TOTAL (INCHES)	PCT. OF NORMAL	NORMAL (INCHES)	STATION	TOTAL (INCHES)	PCT. OF NORMAL	NORMAL (INCHES)
KAHALUI, MAUI, HI	0.06	1.5	4.05	SAN BERNARDINO, CA	1.31	39.7	3.30
SAN FRANCISCO, CA	0.25	5.4	4.64	LONG BEACH, CA	1.35	40.1	3.37
SACRAMENTO, CA	0.35	8.7	4.01	LOS ANGELES, CA	1.38	45.4	3.04
BLUE CANYON, CA	0.44	3.1	14.11	EASTPORT, ME	1.42	37.8	3.76
RED BLUFF, CA	0.48	10.7	4.48	MEDFORD, OR	1.54	45.3	3.40
MOUNT SHASTA, CA	0.52	7.2	7.21	MEACHAM, OR	1.64	39.5	4.15
SANTA BARBARA, CA	0.64	16.7	3.83	EUREKA, CA	1.65	23.6	6.98
LIHUE, KAUAI, HI	0.67	10.8	6.22	SALEM, OR	2.42	34.4	7.04
HONOLULU, OAHU, HI	0.77	20.4	3.77	PORTLAND, OR	2.57	41.8	6.15
KOKEE, KAUAI, HI	0.89	9.3	9.61	EUGENE, OR	3.73	44.6	8.37
REDDING, CA	0.89	10.5	8.51	HILO/LYMAN, HAWAII, HI	3.82	40.6	9.41
SEXTON SUMMIT, OR	1.14	16.3	7.00				

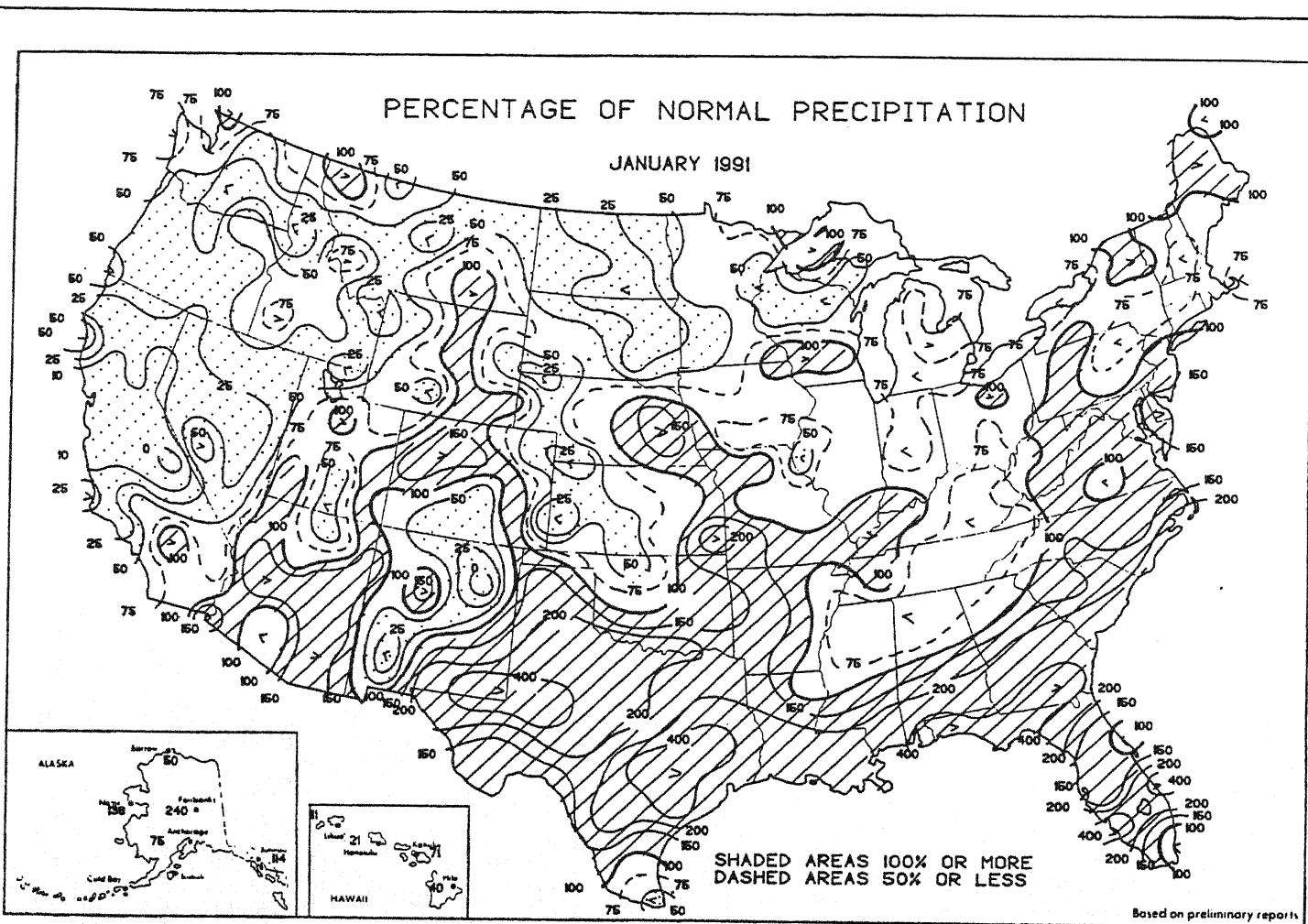


Figure 3. January 1991 percent of normal precipitation. Above normal January precipitation fell on parts of the Rockies, northern New England, mid-Atlantic, lower Missouri Valley, and throughout the southern Plains and along the Gulf and southern Atlantic Coast states, including most of southern and central Florida. Elsewhere, however, well below normal monthly precipitation occurred in the Far West, across the northern tier of states, central Plains, Ohio and Tennessee Valleys, and Hawaii.

TABLE 3. JANUARY 1991 AVERAGE TEMPERATURES 3.5°F OR MORE ABOVE NORMAL.

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
NORTHWAY, AK	+10.2	-11.1	BLUE CANYON, CA	+4.2	41.2
FAIRBANKS, AK	+7.4	-4.5	BOZEMAN, MT	+4.2	20.1
MCGRATH, AK	+7.2	-2.9	HAMPTON/LANGLEY AFB, VA	+4.1	43.3
TAMPA, FL	+7.0	66.7	CHATTANOOGA, TN	+4.0	42.6
FORT MYERS, FL	+6.9	70.2	ROANOKE, VA	+4.0	39.4
ORLANDO, FL	+6.3	66.4	BETHEL, AK	+4.0	9.1
VERO BEACH, FL	+6.2	68.1	LYNCHBURG, VA	+3.8	38.8
MIAMI, FL	+5.8	72.9	PHILADELPHIA, PA	+3.8	35.2
MELBOURNE, FL	+5.8	67.3	APALACHICOLA, FL	+3.7	56.6
VALDEZ, AK	+5.7	23.6	PHOENIX, AZ	+3.6	55.9
KEY WEST, FL	+5.6	75.6	RICHMOND/BYRD, VA	+3.6	40.3
WEST PALM BEACH, FL	+5.6	71.1	BECKLEY, WV	+3.6	34.0
DAYTONA BEACH, FL	+5.4	63.3	SITKA, AK	+3.6	33.5
SEXTON SUMMIT, OR	+5.0	40.0	ANCHORAGE, AK	+3.6	16.0
KING SALMON, AK	+5.0	17.8			
CAPE HATTERAS, NC	+4.9	50.0			

TEMPERATURE PERCENTILES  
1 JAN 91 THRU 31 JAN 91

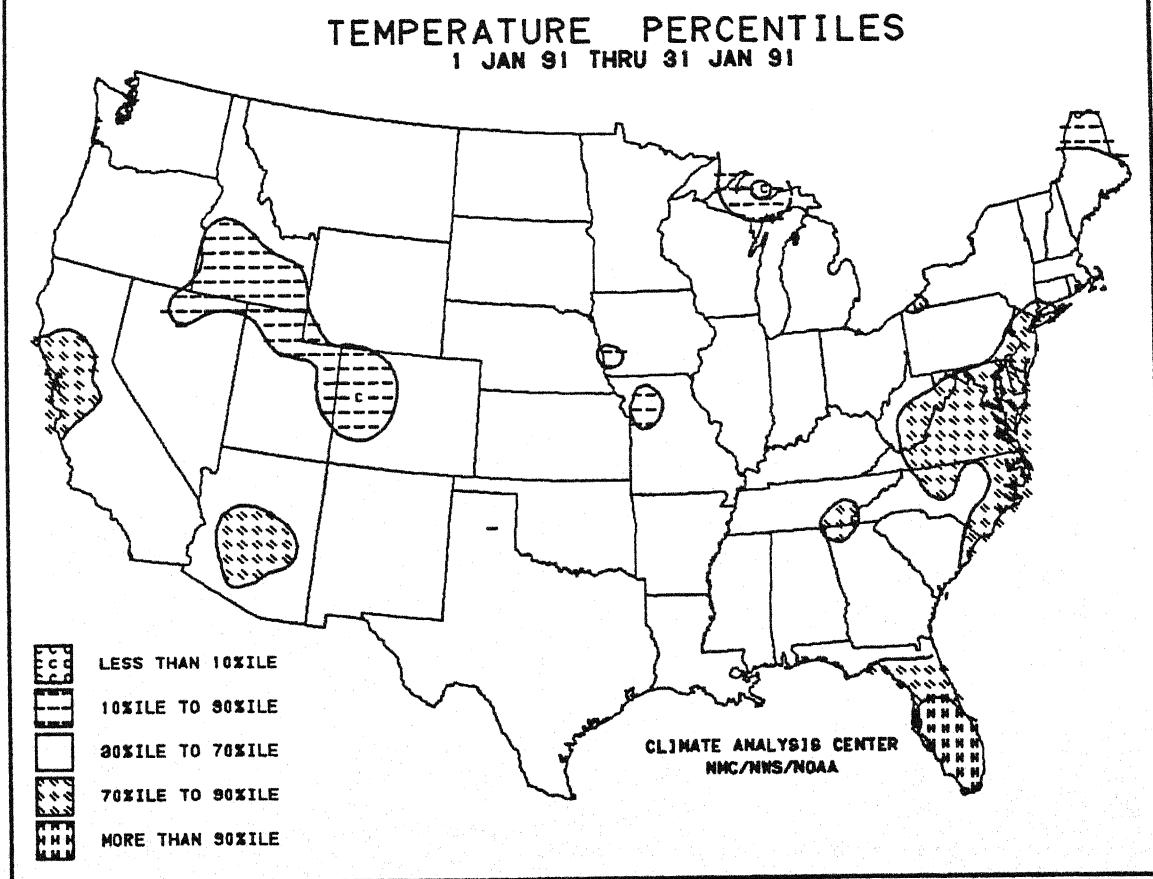
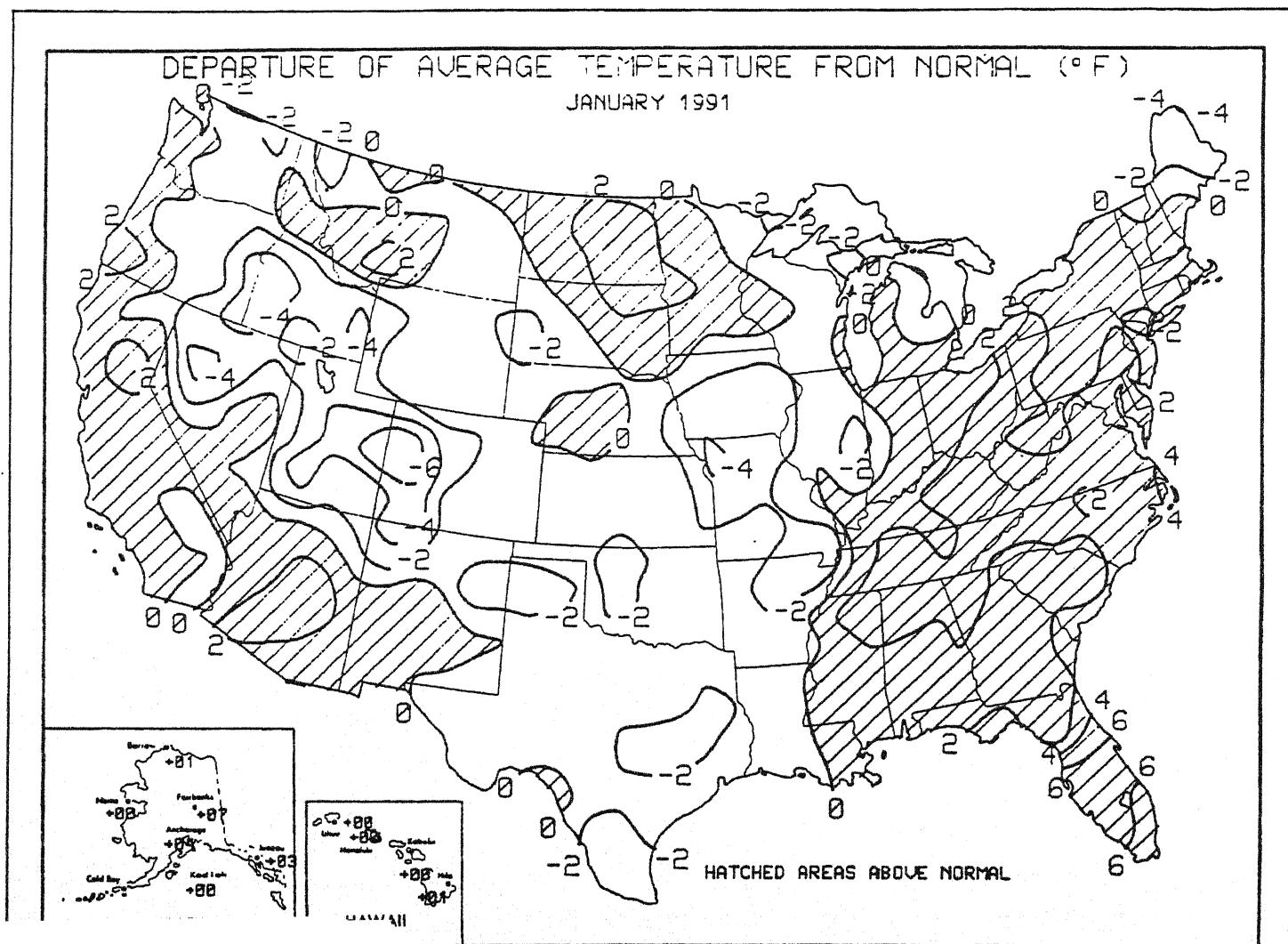


Figure 4. January 1991 temperature percentiles. Monthly temperature extremes [>>70%ile or <30%ile] were rather limited during January 1991 as national temperatures averaged in the middle third of the historic distribution. Substantial January warmth was confined to sections of the mid-Atlantic, Florida, and central California and Arizona while significant monthly coldness was observed in the Great Basin, central Rockies, lower Missouri Valley, upper Great Lakes, and northern Maine.

TABLE 4. JANUARY 1991 AVERAGE TEMPERATURES 3.5°F OR MORE BELOW NORMAL.

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
GRAND JUNCTION, CO	-8.1	17.6	CEDAR CITY, UT	-4.3	25.3
BOISE, ID	-5.6	24.4	JONESBORO, AR	-4.2	36.1
KINGSVILLE NAS, TX	-5.5	54.9	CHAMPAIGN, IL	-4.1	23.1
FARMINGTON, NM	-5.1	24.5	HARRISON, AR	-3.9	33.1
LOELOCK, NV	-5.1	25.3	BLYTHEVILLE AFB, AR	-3.9	35.8
KANSAS CITY/INTL., MO	-4.9	22.8	OMAHA/EPPLEY, NE	-3.8	16.4
ALAMOSA, CO	-4.7	10.9	WINNEMUCCA, NV	-3.8	26.2
ENID/VANCE AFB, OK	-4.7	31.8	CEDAR RAPIDS, IA	-3.7	14.8
POPLAR BLUFF, MO	-4.7	31.9	BURLINGTON, IA	-3.7	20.2
TUCUMCARI, NM	-4.7	32.4	BAKER, OR	-3.7	21.5
IDAHO FALLS, ID	-4.6	14.1	CARIBOU, ME	-3.6	7.2
POCATELLO, ID	-4.5	19.4	FT. SILL/HENRY POST AAF, OK	-3.5	36.4
SALT LAKE CITY, UT	-4.3	24.4			



average temperatures (°F). Unlike a year ago when abnormally mild temperatures this January were generally seasonable in the contiguous reported in the Far West, eastern third of the country, northern while subnormal January temperatures covered the nation's west, and northern New England.

**TABLE 5. RECORD JANUARY PRECIPITATION.**

(Note: There were most-likely several other Gulf Coast stations with record high January precipitation, but historic records are lacking).

STATION	TOTAL (INCHES)	NORMAL (INCHES)	PCT. OF NORMAL	RECORD TYPE	RECORDS BEGAN
APALACHICOLA, FL	23.48	3.51	668.9	HIGHEST	1930
NEW ORLEANS/MOISANT, LA	19.25	4.95	388.9	HIGHEST	1851
TALLAHASSEE, FL	18.96	4.64	408.6	HIGHEST	1924
PENSACOLA, FL	18.77	4.47	419.9	HIGHEST	1879
MOBILE, AL	16.07	4.57	351.6	HIGHEST	1851
PORT ARTHUR, TX	14.87	4.06	366.3	HIGHEST	1930
LAKE CHARLES, LA	14.29	4.58	312.0	HIGHEST	1961
CAPE HATTERAS, NC	12.44	4.81	258.6	HIGHEST	1958
MACON, GA	10.87	4.26	255.2	HIGHEST	1934
GALVESTON, TX	10.75	2.99	359.5	HIGHEST	1871
WILMINGTON, NC	10.22	3.64	280.8	HIGHEST	1871
JACKSONVILLE, FL	10.21	2.93	348.5	HIGHEST	1872
HOUSTON, TX	9.76	3.48	280.5	HIGHEST	1947
AUSTIN, TX	9.21	1.59	579.2	HIGHEST	1951
SAVANNAH, GA	8.98	3.09	290.6	HIGHEST	1875
CHARLESTON, SC	7.80	3.31	235.6	HIGHEST	1943
VICTORIA, TX	7.76	1.87	415.0	HIGHEST	1961
MARQUETTE, MI	0.92	2.00	46.0	LOWEST	1979
SAN FRANCISCO, CA	0.24	4.64	5.4	LOWEST	1851
LEWISTON, ID	0.14	1.38	10.1	LOWEST	1951
KAHULUI, MAUI, HI	0.06	4.05	1.5	LOWEST	1947

Note: Trace precipitation is considered ZERO precipitation. Stations with no precipitation are only included if normal precipitation is 0.25 inches or more.

**TABLE 6. RECORD JANUARY EXTREME TEMPERATURES.**

STATION	EXTREME (°F)	DATE	RECORD TYPE	RECORDS BEGAN
DAYTONA BEACH, FL	87	30 JAN 91	HIGHEST	1944
ORLANDO, FL	87	30 JAN 91	HIGHEST	1943
TAMPA, FL	86	01 JAN 91	HIGHEST	1941
KEY WEST, FL	86	29 JAN 91	HIGHEST	1945
TALLAHASSEE, FL	82	30 JAN 91	HIGHEST	1940
SACRAMENTO, CA	70	19 JAN 91	HIGHEST	1940

### U.S. PERCENT AREA DRY AND WET

JANUARY 1985 THROUGH JANUARY 1991

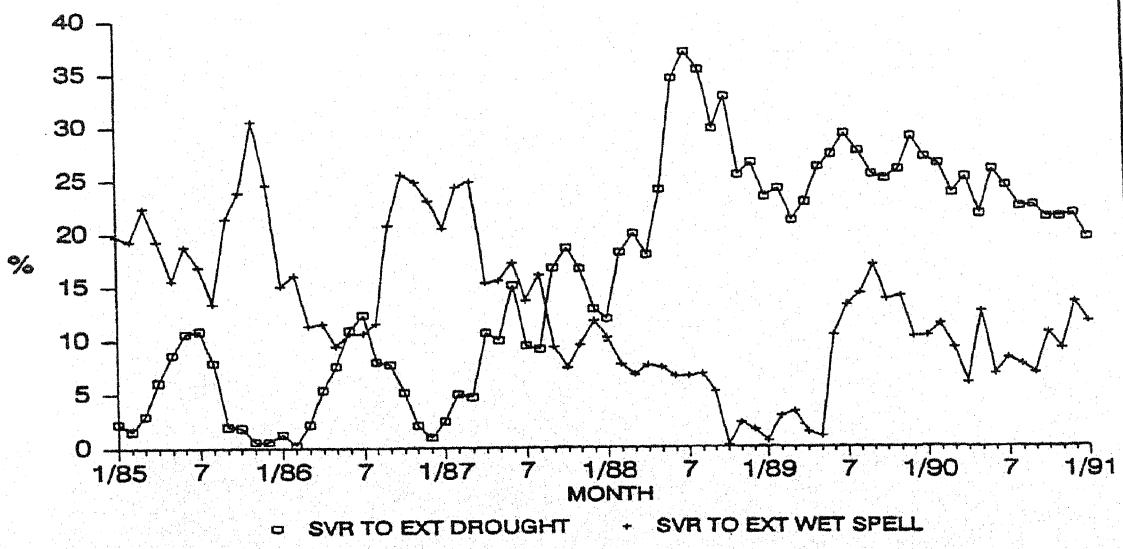


Figure 6. U.S. percent area dry [PDI<-3] and wet [PDI>+3], January 1985 - January 1991, based upon the Palmer Drought Index [PDI]. Approximately a fifth of the country experienced severe or extreme long-term drought, particularly in the Far West and northern Plains, and a tenth of the nation, mainly the Midwest and New England, was severely extremely wet. The recent slight decrease in the "dry" line was attributed to the elimination of dryness along the Gulf Coast while dry January weather diminished the area of wetness in parts of the Midwest and Northeast.

CALIFORNIA STATEWIDE PRECIPITATION  
OCTOBER-JANUARY, 1895-96 to 1990-91

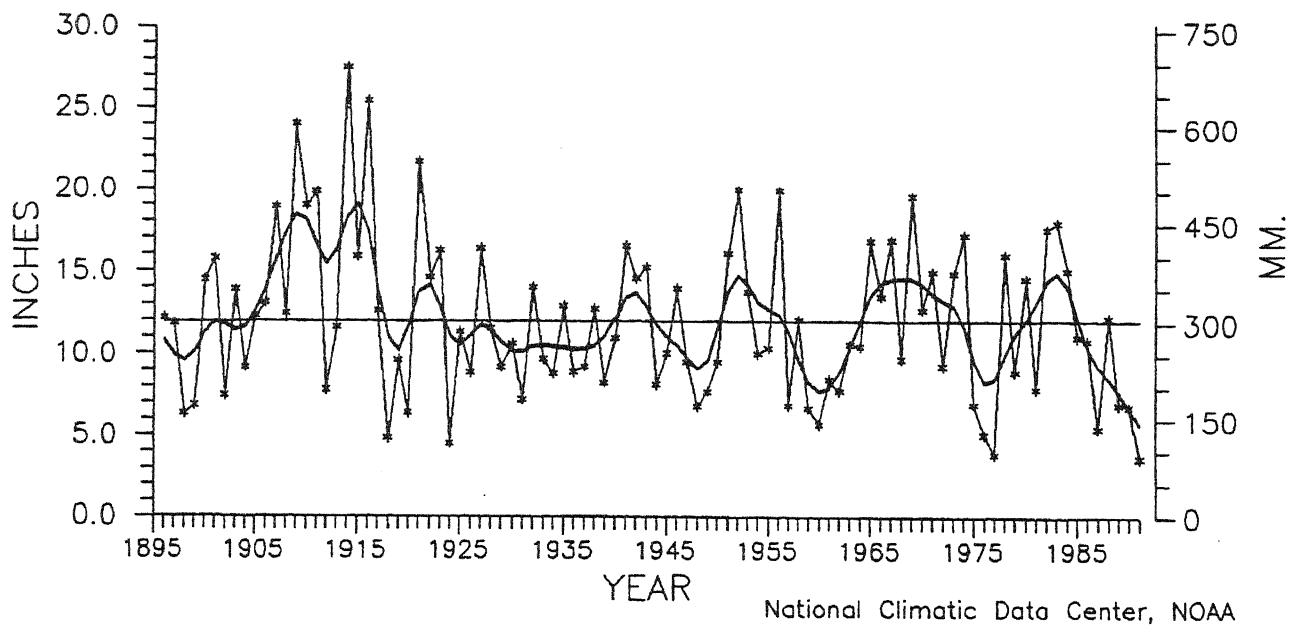


Figure 7. California statewide precipitation, October-January, 1895-96 to 1990-91. With over 90% of western California's normal annual precipitation occurring during Oct.-Apr., the first four months of the 1990-1991 rainy season are at RECORD LOW LEVELS, even when compared to the exceptionally dry 1976-1977 season. In addition, the smoothed filtered curve, which indicates long-term conditions, has also reached record low levels.

CALIFORNIA STATEWIDE PRECIPITATION  
OCTOBER-APRIL, 1895-96 to 1989-90

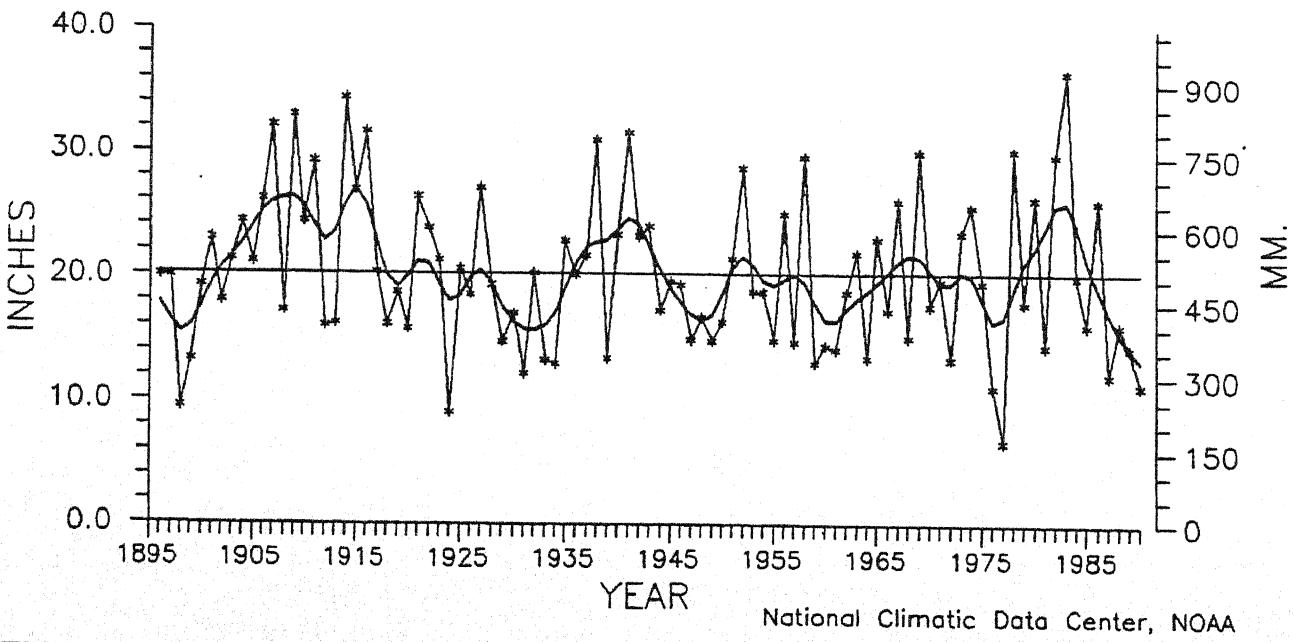


Figure 8. California statewide precipitation, October-April [rainy season], 1895-1896 to 1989-1990. The past four rainy seasons [Oct.-Apr.] have been abnormally dry in California. Unfortunately, October 1990 - January 1991 was exceptionally dry, increasing the probability that this season will similarly record well below normal precipitation (barring copious Feb.-Apr. precipitation) and produce the fifth straight subnormal rainy season.